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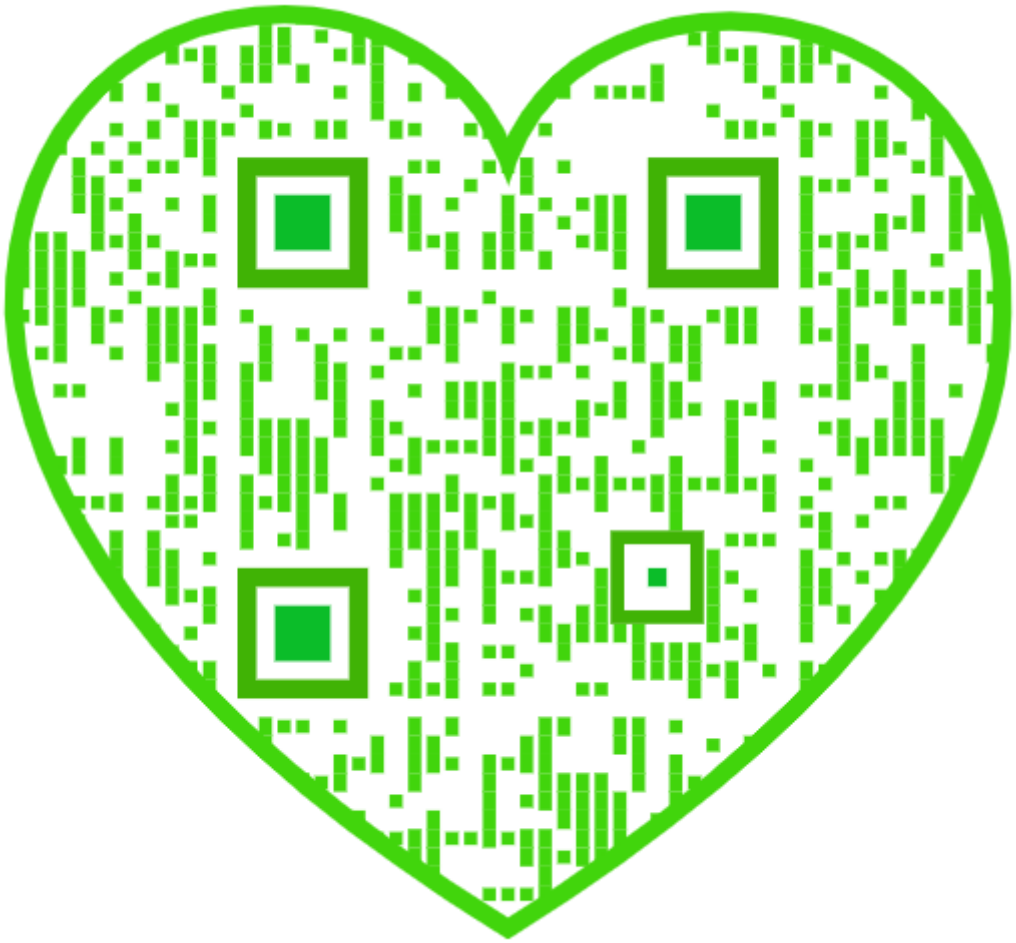

Winchester® Powders

WST

Target shotshell and standard velocity handgun propellant. Ideal for use in 45 Auto match applications. Consistent,clean, low flash and smoke are benefits to the shooter. Powder of choice for reloading AA shells.

231

As the most popular reload propellant, 231 is a pistol powder ideally suited to the 38 Special, 45 auto, and 9mm standard loads. Consistency, clean burning, low flash, and a broad range of applications make this a powder of choice on any pistol cartridge reloader's shelf.

WSF

Super-Field® propellant is the propellant of choice for Winchester 20 gauge AA® Target Load and 12 gauge 3 3/4 dram equivalent Super-X® load. WSF is an ideal choice to maximize velocities in 12 gauge 1 1/8 oz. and 1 1/4 oz. loads. Super-Field also performs well in 38 Super, 9mm and 40 S&W pistol loads. Excellent propellant for fast shooting action pistol applications.

296

This propellant was developed for Winchester factory loaded ammunition for 357 magnum, 44 magnum and 410 bore. Its high loading density provides optimal velocity. 296 is also the powder type used by Winchester for factory loaded 410 bore AA loads. However, 296 is not suitable for most rifle cartridges.

748

748 is the powder of choice by Winchester and the U.S. military for 5.56mm and 223 Rem. ammunition. The low flame temperature of 748 extends barrel life versus other similar speed powders. It can be used in a wide variety of centerfire rifle loads including 222 Rem, 30-30 Win, 308 Win, and up to 458 Win. Mag. Combine Winchester components with 748 to duplicate 308 Win factory load ballistics. 748 is recommended for use with the new 308 Fail Safe® bullets.

760

Combine Winchester components with 760 to duplicate 30-06 factory load ballistics. 760 has ideal flow characteristics which give it an advantage over other propellants with similar burn rates. 760 is recommended as an excellent choice for 7mm-08 as well as with the new 30-06 Fail Safe bullet.

WXR

WXR is the propellant of choice for 7mm Magnum Winchester factory loaded ammunition. It is a double base, slow burning extruded propellant used to achieve maximum velocities and deliver superior performance in a wide variety of rifle cartridges.

Winchester® Primers

You can't buy a more reliable primer than Winchester. Ignition is instant and precise. In Winchester testing labs, primers are constantly and rigorously tested for consistency and sensitivity at temperatures and conditions far beyond the range of normal usage. Ignition reliability is assured when you use Winchester primers.

- Better sensitivity for more positive firing in all guns.
- 7 different primers cover your reloading needs for shotshells, rifle and handgun cartridges.
- Non-corrosive, non-mercuric.
- Weight of the primer mixture is carefully controlled.
- Every Winchester primer is consistent in size and quality.
- Anvil heights are measured to precise tolerances to assure perfect ignition.
- Winchester primers maintain stability in extremes of temperature and humidity.

WARNING - Primers may explode if subjected to impact, shock, or intense heat. Store in original factory container only. Primers in bulk are capable of mass explosion. Do not use primer feed devices for reloading.

Winchester Primers: Centerfire primers are recommended for use as follows:

Large Rifle - WLR

22-250 Remington	284 Winchester	300 Winchester Magnum	356 Winchester
225 Winchester	7mm Mauser	300 H&H Magnum	358 Winchester
243 Winchester	7-08 Remington	300 Savage	375 H&H Magnum
6mm Remington	7mm STW	303 Savage	38-55 Winchester
25-35 Winchester	280 Remington	303 British	458 Winchester Magnum
250 Savage	7.62 x 39mm	308 Winchester	
25-06 Remington	30-30 Winchester	32 Winchester Special	
257 Roberts +P	30 Remington	8mm Mauser	
7mm-08 Remington	30-06 Springfield	338 Winchester Magnum	
270 Winchester	30-40 Krag	35 Remington	

Small Rifle - WSR

218 Bee	223 Remington	357 Remington Maximum
22 Hornet	25-20 Winchester	9x23 Winchester
222 Remington	256 Winchester Magnum	454 Casull
222 Remington Magnum	30 Carbine	

Small (Reg) Handgun - WSP

25 Automatic	32 Short Colt	38 S&W	38 Super Automatic +P
30 Luger	32 Long Colt	38 Special	38 Automatic
32 Automatic	32 Colt New Police	38 Short Colt	380 Automatic
32 S&W	9mm Luger	38 Long Colt	40 S&W
32 S&W Long	9mm Winchester Magnum	38 Colt New Police	

Large (Reg) Handgun - WLP

38-40 Winchester	44-40 Winchester	45 Winchester Magnum
10mm Automatic	44 Magnum	
41 Magnum	45 Colt	
44 S&W Special	45 Automatic	

Small (Mag) Handgun - WSPM

357 Magnum

Large (Mag) Rifle - WLRM

Large rifle magnum primer for those heavy charges of slow powder where extra ignition is required. Use only where magnum primers are specified.

Shotshell - #209

Winchester #209 Shotshell primers are recommended for superior performance in all standard gauge shotshell reloading applications.

Winchester® Wads

Reloaders seldom give wads the same critical attention given to other components. Often the result is poor performance - due entirely to the wad. Take a moment to review the high quality features of Winchester wads. For consistent, dependable performance shot after shot, ask for Winchester AA® wads.

- Available in 12, 20, 28, and 410, for all kinds of loads: target and field.
- Designed for the proper rate of collapse.
- Forms the right shape cup over the powder for proper obturation.
- Cushions the initial shock, designed to take the bite out of recoil.
- Petal design protects the shot against flat-spotting, minimizes flyers in the pattern.
- The uniform ballistics obtained with brand name wads may not be achieved with lower cost substitutes.
  * Wad must collapse at pre-determined rate in order to insure the proper pressure curve from the burning powder.

Winchester shot-protector wads of the AA® type are available to the handloader in ten types in 4 different gauges. All wads are packed 250 per container, except the WT12 which is 500. The 12 and 20 gauge wads are packed 5,000 per case. The 28 gauge and 410 wads are packed 2,500 per case.

WAA12L - gray, one-piece wad specially designed to duplicate the 24 gram Olympic load and 7/8 oz. loads. Can also be used for one ounce load.

WT12 - orange, one-piece wad. Economical substitute for WAA12, can also be used where WAA12 is called out.

WAA12 - white, one-piece wad for use in 12 gauge compression formed cases for 1-1/8 ounce loads for trap, skeet and field loads and other loads as shown in the data.

WAA12R - red, one-piece wad for use in a wide variety of cases, including compression formed cases, and for heavy field loads.

WAA12F114 - a yellow, flared petal AA type wad designed specifically for 12 gauge field loads with 1-1/4 ounce and 1-3/8 ounce shot charges.

WAA12SL - pink, one-piece wad used in 12 gauge for 1 to 1-1/8 ounce loads. A tight crimp offers the best performance. Duplicate the length of factory Super-Lite® loads for top performance.

WAA20 - white, one-piece wad for use in 20 gauge compression formed cases for skeet and field loads for 7/8 to 1ounce loads. Also useful in other applications as specified in the data.

WAA20F1 - a yellow, flared petal AA type wad designed specifically for 20 gauge field loads with 1 ounce to 1-1/8 ounce shot charges.

WAA28 - pink, one-piece wad for use in 28 gauge compression formed cases for skeet and field loads.

WAA41 - white, one-piece wad for use in .410 bore compression formed cases for skeet and field loads.

Winchester® Shot

Winchester uniform, chilled lead shot provides consistent shot patterns and better penetration.

Strict quality control throughout the manufacturing process assures the ultimate in performance.
All Winchester shot available in 25 pound bags.

Chilled Shot		Chilled Shot		Hard Shot (AA®)	
Symbol	**Description**	**Symbol**	**Description**	**Symbol**	**Description**
SS00BY	00 BUCK	SC6Y	#6 Chilled	SC75YH	#7½ Hard
SC2Y	#2 Chilled	SC75Y	#7½ Chilled	SC8YH	#8 Hard
SC4Y	#4 Chilled	SC8Y	#8 Chilled	SC9YH	#9 Hard
SC5Y	#5 Chilled	SC9Y	#9 Chilled		

Source of Empty Cases

All Winchester® cases used in shotshell reloading are obtained as a result of first firing of factory loaded ammunition. In a great many instances, once-fired AA® cases and other Winchester shotshells can be purchased from local skeet and trap ranges, gun clubs, and dealers catering to the shotshell reloaders. If this service is not available, the only means of obtaining these cases would be as the result of firing factory ammunition.

Powder Bushings and Scales

Shotshell reloading tool powder bushings do not throw the exact charge specification in many cases. The reasons are many and include:

1. Variations in gravimetric density of powders from lot to lot.
2. Usually a bushing chart lists the nominal weight of a powder charge based on normal packing as a result of free flow and gravimetric density of a powder or on a bushing volume and the nominal gravimetric powder density at 100% packing.
3. Various operators of a tool will get various powder weight from an identical tool and bushing. This is due to the change in force of operation and the amount of vibration transmitted to the tool with resultant amount of packing of powder.
4. The amount of sizing force required on cases being loaded can cause a change in powder drop due to the change in tool vibration.
5. Bushing manufacturing tolerances.
6. Tool manufacturing tolerances.
7. Mismarked bushings.

A bushing listing chart cannot be interpreted as an absolute. It can represent what the manufacturer believes to be the nominal charge thrown with the listed bushing and powder. A reloading scale is an absolute must. Charges thrown must be carefully checked and changes in bushing sizes made where required. Do not try to determine the powder charge thrown by simply metering the powder bar back and forth and weighing charges. The tool must be cycled through the complete loading cycle to insure the same amount of vibration and powder packing as will take place in a normal loading cycle. Powder charges measured under the two conditions could vary as much as several grains.

WARNING–Steel Shot

With reference to the repeated inquiries on the reloading of steel shotshells, Winchester's advice, at this time, is: "DON'T DO IT!" Wait until suitable components and tested data are available from the ammunition makers.

At this time, key components, for acceptable steel shot loads, are not widely available to reloaders. This includes "soft" steel shot, the special plastic wads and shot sleeves designed for use with such shot, and the special powder and primer required. Some steel shot pellets have a diamond pyramid hardness of up to 270, as compared to the desired DPH of about 90 for the soft steel shot being used in commercial shot loads.

In some cases, available steel pellets are harder than the gun barrel in which they would be fired and can severely score barrel walls and distort barrel chokes. Commercial steel shot loads have special wads and thick plastic shot sleeves helping to shield the barrel wall from the shot pellets. The shot sleeves used in lead shot loads are not sufficient to protect gun barrels from damage due to steel shot. The reloading of steel shot loads, entirely different than loading lead shot ammunition, requires all new components and data. The attempt to load steel shot loads, with current components, would damage your gun and could injure the shooter or bystander.

Basically, when reliable data is available, the recommendations are as follows:

1. DO NOT RELOAD STEEL SHOTSHELLS WITH ANY COMPONENT OTHER THAN THOSE SPECIFICALLY RECOMMENDED BY THE MANUFACTURER AS SUITABLE FOR SUCH LOADS.
2. DO NOT USE STEEL SHOT COMPONENTS IN LEAD SHOT LOADS UNLESS THE MANUFACTURER RECOMMENDS SUCH DUAL APPLICATION.

Steel shot components are not currently available from Winchester.

WARNING–Bismuth Shot

The reloading of Bismuth shot requires data developed specifically for Bismuth shot. Please refer to Bismuth Cartridge Company for appropriate load data for Bismuth shot. Do not reload Bismuth shotshells with any component other than those specifically recommended by the manufacturer as suitable for such loads. Bismuth Cartridge Company can be contacted at 7100 De Celis Pl, Van Nuys, CA 91406.

Buffered Shot Cautions

The use of any buffering material in a shot column will significantly alter the ballistics for any given shotshell load. Also, if not carefully tested, buffering materials can produce dangerously high pressures. The development of loading data for any buffered load requires extensive pressure and velocity testing to insure the proper speed propellant powder and propellant charge weight are being used for the specific buffering material.

The use of talc, flour, and similar non-compressible materials should not be considered as buffering materials as they can produce dangerously high, erratic pressures in an unpredictable manner.

The rate with which shotshell propellant burns within a shotshell is governed to a great extent by the uniform compressibility of the wadding and the shot itself. Changes in the compressibility, such as is the case with buffering materials, can drastically change the burn rate of the propellant. Careful testing is required to assure the load will not result in a damaged gun, personal injury or death. We do not suggest the use of buffered shot reloads without lab testing.

Shotshell Loading Instructions

CAUTION: Carefully read the information on the powder can label and follow the recommended loading instructions and precautions contained herein, before using the reloading data.

Winchester suggested loads are based on results obtained in our laboratory under carefully controlled conditions. They are offered without fee as an aid to handloaders, to be employed at their own discretion and risk. Since Winchester has no control over the circumstances of loading, Winchester assumes no liability for the results obtained. The handloading of shotshells should be undertaken only by those familiar with all safety precautions and observe conservative practices in reloading operations. The powder charges shown are maximum and must not be exceeded.

Cases

Exercise extreme care in determining use of the exact case listed in the data. Be certain to select the exact case being loaded. Substitution could be dangerous and data is not interchangeable from one case type to another. When in doubt contact the manufacturer of the case.

Primers

Winchester® Ammunition has a long-standing tradition of providing shooters and hunters with the finest ammunition products available. The company continues that tradition with the announcement of improvements in the performance of the Winchester 209 component shotshell primer. Winchester component primers have been the standard by which others have been measured for years. The improved 209 primer uses the same time-proven priming mix that has made the Winchester primers so popular among reloaders. The difference and improvement comes in the surface finish of the primer cup and battery cup of the 209 primer. Specifically, Winchester is changing the copper plated battery cup to a zinc plated battery cup. In addition, they are changing the nickel plated primer cup to a brass primer cup. These surface finish changes have resulted in an increase in the sensitivity of the primer with a more positive ignition of the primer even with off-center firing pin hits. Consumers should note that the new primer contains the exact primer mix as the old primer. No changes in existing load recipe data for the Winchester 209 primer are required. New packaging and graphics feature a banner to highlight the improved primer. For the immediate future, the Winchester 209 package will feature the words "NEW Surface Finish for Improved Sensitivity" on both the outside of the package and on the sleeve inside.

Use only those primers which are specifically shown in the data; do not substitute one primer for another. To do so could result in a significant change in ballistics, and could result in an unsatisfactory or even dangerous load. Never use shotshell primers having uncovered flash holes with BALL POWDER® smokeless propellants. To do so could be dangerous.

Powder

Check all powder charges with a scale. Check about 10 shells to determine the average weight of charges thrown and the uniformity of the charge. Variations in how the loading tool is handled, in the bushings themselves and in the specific components used, will alter the charges thrown. It is essential to check charge weight with a scale and go to the next larger or smaller bushing when and where required.

Wads

Use only those wads as specifically shown in the data; do not substitute one wad for another. To do so could result in a significant change in ballistics and could result in an unsatisfactory or even dangerous load. The uniform ballistics obtained with brand name wads may not be achieved with lower cost substitutes.

Wad Seating Pressure

Wad pressure, when using BALL POWDER propellant, is not critical. Pressures from 0 lbs. to 100 lbs. may be appropriate. The only criterion is enough pressure must be used to insure a good crimp. A safe level to use is 40 pounds, from which the loader may vary at his own choice to get the best crimp. Wads must be seated on the powder (no air space should exist between wad and powder). Do not load any components that require more than 100 pounds wad pressure.

Shot Bushing Diameters

.424-1/2 Oz.	.565-7/8 Oz.	.664-1 1/4 Oz.	.750-1 5/8 Oz.
.477-5/8 Oz.	.596-1 Oz.	.695-1 3/8 Oz.	.780-1 3/4 Oz.
.517-3/4 Oz.	.641-1 1/8 Oz.	.721-1 1/2 Oz.	.809-1 7/8 Oz.

Velocity

Velocities quoted in the data are averages of a series of shots fired in accordance with equipment and techniques used throughout the American arms and ammunition industry. Listed loads have given uniform velocity results in tests.

Shotshell velocity barrels used conform to the following lengths as approved by SAAMI*

10 ga.-3 1/2" Full Choke 32"	20 ga.-3" Full Choke 30"
12 ga.-3" Full Choke 30"	20 ga.-2 3/4" Full Choke 26"
12 ga.-2 3/4" Full Choke 30"	28 ga.-2 3/4" Full Choke 26"
16 ga.-2 3/4" Full Choke 28"	410 bore-2 1/2" or 3" Full Choke 26"

*Sporting Arms and Ammunition Manufacturers Institute

Pressure Data

All pressure data listed as psi has been measured with the latest Piezo electric system showing actual pounds per square inch (psi) and cannot be compared directly to the old data which used the copper crusher method (cup) or lead crusher method (LUP).

Black Powder Warning: Never substitute smokeless powder for black powder or Pyrodex® or mix smokeless powder with black powder or Pyrodex®. Never use smokeless powder in black powder firearms or in saluting cannons. Smokeless powder has much more energy than black powder or Pyrodex®. Substituting or mixing powders may cause the firearm to blow up resulting in personal injury, property damage, or death. Ballistics of shotshells are affected not only by the type and amount of powder, but also by the pellet size and charge weight of shot, the type of crimp, the type of shotshell case, and the type of wads used. Follow loading data instructions and do not deviate from recommended combinations.

Patterning

Typical Percentage of Pellets in a 30-inch Circle at 40 yards (Pattern) for Various Choke Sizes.
(Choke is a Constriction at the Muzzle of a Shotgun Barrel.)

Full Choke-65-70%	Improved Modified Choke-55-65%	Modified Choke-45-55%
Improved Cylinder-35-45%	True Cylinder-25-35%	

Selection of Shotshell Loads

Shotshell loads in this data reference are listed in order of gauge, shell length, case type and shot weight. Be certain to select the data for the exact case being loaded. Data is not interchangeable from one case type to another.

12 Gauge 2-3/4" Case
AA® Compression Formed

Shot Wgt.	*Primer*	*Powder*	*Charge (grains)*	*Wad Column*	*Velocity (fps)*	*Pressure*
7/8-oz.*	Win. 209	WST	22.0	Win. WAA12L	1325	7,900 psi
7/8-oz.	Fed. 209A	WST	23.5	Win. WAA12L	1355	7,400 psi
7/8-oz.	CCI 209	WST	23.5	Win. WAA12L	1355	7,200 psi
7/8-oz.	Win. 209	WST	23.5	Win. WAA12L	1400	8,200 psi
1 oz.**	Win. 209	WST	19.5	Win. WAA12SL	1180	7,400 psi
1 oz.	Win. 209	WST	19.0	Fed. 12S0	1180	8,000 psi
1 oz.	CCI 209	WST	19.0	Fed. 12S0	1180	8,300 psi
1 oz.	Fed. 209	WST	19.5	Fed. 12S0	1180	7,900 psi
1 oz.	Fed. 209A	WST	19.0	Win. WAA12SL	1180	7,900 psi
1 oz.	Win. 209	WST	19.5	Win. WAA12L	1200	8,500 psi
1 oz.	Win. 209	WST	21.0	Win. WAA12SL	1235	8,100 psi
1 oz.	Win. 209	WST	20.5	Fed. 12S0	1235	9,500 psi
1 oz.	CCI 209	WST	21.5	Win. WAA12SL	1235	7,900 psi
1 oz.	CCI 209	WST	20.5	Fed. 12S0	1235	9,500 psi
1 oz.	Fed. 209	WST	21.0	Win. WAA12SL	1235	7,400 psi
1 oz.	Fed. 209	WST	21.0	Fed. 12S0	1235	9,300 psi
1 oz.	Fed. 209A	WST	20.0	Win. WAA12SL	1235	8,900 psi
1 oz.	Win. 209	WST	21.0	Win. WAA12L	1255	9,600 psi
1 oz.	Fed. 209A	WST	21.5	Win. WAA12L	1255	8,800 psi
1 oz.	CCI 209	WST	21.0	Win. WAA12L	1255	8,400 psi
1 oz.	Win. 209	WST	22.0	Win. WAA12SL	1290	9,000 psi
1 oz.	Win. 209	WST	22.0	Fed. 12S0	1290	10,900 psi
1 oz.	CCI 209	WST	22.5	Win. WAA12SL	1290	9,400 psi
1 oz.	CCI 209	WST	21.5	Fed. 12S0	1290	10,700 psi
1 oz.	Fed. 209	WST	22.5	Win. WAA12SL	1290	8,400 psi
1 oz.	Fed. 209	WST	22.5	Fed. 12S0	1290	10,700 psi
1 oz.	Fed. 209A	WST	21.0	Win. WAA12SL	1290	9,800 psi
1 oz.	Win. 209	WST	22.5	Win. WAA12L	1325	11,100 psi
1 oz.	CCI 209	WST	22.5	Win. WAA12L	1325	10,200 psi
1 1/8 oz.*	Win. 209	WST	18.5	Win. WAA12	1145	8,600 psi
1 1/8 oz.	Win. 209	WST	19.0	Rem. RXP12	1145	8,700 psi
1 1/8 oz.	Win. 209	WST	19.0	Rem. Fig-8	1145	8,400 psi
1 1/8 oz.	Win. 209	WST	19.0	Fed. 12S3	1145	9,800 psi
1 1/8 oz.	CCI 209	WST	19.0	Win. WAA12	1145	9,100 psi
1 1/8 oz.	CCI 209	WST	19.5	Rem. RXP12	1145	8,800 psi

* This load will duplicate the ballistics of the factory AA Winchester Light 2 3/4 dram eq. target load.
** This load will duplicate the ballistics of the factory AA Winchester Heavy 3 dram eq. target load.

CAUTION: DO NOT INTERCHANGE FED 209 AND FED 209A PRIMERS

12 Gauge 2-3/4" Case
AA® Compression Formed

Shot Wgt.	*Primer*	*Powder*	*Charge (grains)*	*Wad Column*	*Velocity (fps)*	*Pressure*
1 1/8 oz.	CCI 209	WST	19.0	Rem Fig-8	1145	9,000 psi
1 1/8 oz.	CCI 209	WST	19.0	Fed. 12S3	1145	9,500 psi
1 1/8 oz.	Fed. 209	WST	19.0	Win. WAA12	1145	9,000 psi
1 1/8 oz.	Fed. 209	WST	19.5	Rem. Fig-8	1145	8,100 psi
1 1/8 oz.	Fed. 209	WST	19.5	Fed. 12S3	1145	10,000 psi
1 1/8 oz	Fed. 209A	WST	18.5	Win. WAA12	1145	10,700 psi
1 1/8 oz	Fed. 209A	WSF	21.5	Win. WAA12SL	1145	7,200 psi
1 1/8 oz.**	Win. 209	WST	20.0	Win. WAA12	1200	9,800 psi
1 1/8 oz.	Win. 209	WST	20.0	Rem. RXP12	1200	9,700 psi
1 1/8 oz.	Win. 209	WST	20.5	Rem. Fig-8	1200	10,000 psi
1 1/8 oz.	Win. 209	WST	20.0	Fed. 12S3	1200	10,900 psi
1 1/8 oz.	CCI 209	WST	20.5	Win. WAA12	1200	10,300 psi
1 1/8 oz.	CCI 209	WST	20.5	Rem. RXP12	1200	10,300 psi
1 1/8 oz.	CCI 209	WST	20.5	Rem. Fig-8	1200	10,000 psi
1 1/8 oz.	CCI 209	WST	20.5	Fed. 12S3	1200	10,800 psi
1 1/8 oz.	Fed. 209	WST	20.5	Win. WAA12	1200	10,000 psi
1 1/8 oz.	Fed. 209	WST	21.0	Rem. RXP12	1200	10,000 psi
1 1/8 oz.	Fed. 209	WST	21.0	Rem. Fig-8	1200	9,200 psi
1 1/8 oz.	Fed. 209	WST	21.0	Fed. 12S3	1200	10,900 psi
1 1/8 oz.	Fed. 209A	WSF	23.0	Win. WAA12SL	1200	8,400 psi
1 1/8 oz.	Fed. 209A	WSF	24.0	Win. WAA12SL	1255	9,100 psi
1 1/8 oz.	Win. 209	WSF	27.5	Win. WAA12	1310	8,700 psi
1 1/8 oz.	Win. 209	WSF	27.5	Fed. 12S3	1310	8,500 psi
1 1/8 oz.	Fed. 209A	WSF	25.5	Win. WAA12SL	1310	9,800 psi
1 1/8 oz.	Win. 209	WSF	29.0	Win. WAA12	1365	9,900 psi
1 1/8 oz.	Win. 209	WSF	28.5	Fed. 12S3	1365	9,500 psi
1 1/8 oz.	Win. 209	WSF	30.0	Win. WAA12	1400	10,600 psi
1 1/8 oz.	Win. 209	WSF	29.5	Fed. 12S3	1400	10,800 psi
1 1/4 oz.	Win. 209	WSF	26.0	Fed. 12S4	1220	9,000 psi
1 1/4 oz.	Win. 209	WSF	28.0	Win. WAA12F114	1275	9,700 psi
1 1/4 oz.	Win. 209	WSF	27.5	Fed. 12S4	1275	10,900 psi
1 1/4 oz.	CCI 209	WSF	29.0	Rem. RXP12	1275	10,400 psi
1 1/4 oz	Fed. 209A	WSF	27.0	Win. WAA12F114	1310	10,700 psi
1 1/4 oz.	Win. 209	WSF	29.5	Win. WAA12F114	1330	10,600 psi
1 1/4 oz.	CCI 209	WSF	28.0	Rem. SP12	1330	9,800 psi

* This load will duplicate the ballistics of the factory AA Winchester Light 2 3/4 dram eq. target load.
* This load will duplicate the ballistics of the factory AA Winchester Heavy 3 dram eq. target load.

CAUTION: DO NOT INTERCHANGE FED 209 AND FED 209A PRIMERS

12 Gauge 2 3/4" Case Remington RTL, STS & Nitro 27 Hulls

Shot Wgt.	*Primer*	*Powder*	*Charge (grains)*	*Wad Column*	*Velocity (fps)*	*Pressure*
7/8 oz.	Win. 209	WST	21.0	Win. WAA12L	1325	8,200 psi
7/8 oz.	CCI 209	WST	21.5	Win. WAA12L	1325	8,100 psi
7/8 oz.	Fed. 209A	WST	21.0	Win. WAA12L	1325	8,300 psi
7/8 oz.	Win. 209	WST	23.0	Win. WAA12L	1400	10,300 psi
7/8 oz.	CCI 209	WST	23.0	Win. WAA12L	1400	9,000 psi
7/8 oz.	Fed. 209A	WST	23.0	Win. WAA12L	1400	9,700 psi
1 oz.	Win. 209	WST	19.0	Fed. 12S0	1180	8,200 psi
1 oz.	CCI 209	WST	19.0	Win. WAA12SL	1180	8,000 psi
1 oz.	CCI 209	WST	18.5	Fed. 12S0	1180	8,800 psi
1 oz.	Fed. 209	WST	19.0	Win. WAA12SL	1180	8,100 psi
1 oz.	Fed. 209	WST	19.0	Fed. 12S0	1180	8,500 psi
1 oz.	Win. 209	WST	19.5	Win. WAA12SL	1235	8,000 psi
1 oz.	Win. 209	WST	20.0	Fed. 12S0	1235	8,900 psi
1 oz.	CCI 209	WST	20.0	Win. WAA12SL	1235	9,000 psi
1 oz.	CCI 209	WST	19.5	Fed. 12S0	1235	9,800 psi
1 oz.	Fed. 209	WST	20.5	Win. WAA12SL	1235	9,000 psi
1 oz.	Fed. 209	WST	20.0	Fed. 12S0	1235	9,700 psi
1 oz.	Win. 209	WST	21.0	Win. WAA12SL	1290	10,000 psi
1 oz.	Win. 209	WST	21.0	Fed. 12S0	1290	9,700 psi
1 oz.	CCI 209	WST	21.0	Win. WAA12SL	1290	10,100 psi
1 oz.	CCI 209	WST	20.5	Fed. 12S0	1290	10,800 psi
1 oz.	Fed. 209	WST	21.5	Win. WAA12SL	1290	9,700 psi
1 oz.	Fed. 209	WST	21.0	Fed. 12S0	1290	10,900 psi
1 1/8 oz.	Win. 209	WST	19.0	Rem. RXP12	1145	10,500 psi
1 1/8 oz.	Win. 209	WST	19.0	Rem. Fig-8	1145	10,400 psi
1 1/8 oz.	CCI 209	WST	18.0	Win. WAA12	1145	10,800 psi
1 1/8 oz.	CCI 209	WST	18.5	Rem. RXP12	1145	10,800 psi
1 1/8 oz.	CCI 209	WST	18.5	Rem. Fig-8	1145	10,200 psi
1 1/8 oz.	Fed. 209	WST	18.5	Rem. RXP12	1145	10,000 psi
1 1/8 oz.	Fed. 209	WST	18.5	Rem. Fig-8	1145	10,000 psi
1 1/8 oz.	Win. 209	WSF	27.0	Win. WAA12	1310	9,700 psi
1 1/8 oz.	Win. 209	WSF	28.5	Win. WAA12	1365	10,700 psi
1 1/8 oz.	Win. 209	WSF	28.0	Fed. 12S3	1365	8,900 psi
1 1/8 oz.	Win. 209	WSF	29.0	Fed. 12S3	1400	9,500 psi
1 1/4 oz.	Fed. 209	WSF	26.5	Win. WAA12F114	1220	8,800 psi
1 1/4 oz.	CCI 209	WSF	25.5	Win. WAA12F114	1220	9,100 psi
1 1/4 oz.	Win. 209	WSF	27.5	Win. WAA12F114	1275	9,700 psi
1 1/4 oz.	Fed. 209	WSF	28.0	Win. WAA12F114	1275	9,500 psi
1 1/4 oz.	Fed. 209	WSF	28.0	Rem. RXP12	1275	9,500 psi
1 1/4 oz.	CCI 209	WSF	27.0	Win. WAA12F114	1275	10,200 psi
1 1/4 oz.	Win. 209	WSF	29.5	Win. WAA12F114	1330	10,400 psi
1 1/4 oz.	Fed. 209	WSF	29.5	Win. WAA12F114	1330	10,200 psi
1 1/4 oz.	Fed. 209	WSF	29.5	Rem. RXP12	1330	10,700 psi
1 1/4 oz.	CCI 209	WSF	28.5	Win. WAA12F114	1330	10,900 psi

CAUTION: DO NOT INTERCHANGE FED 209 AND FED 209A PRIMERS

12 Gauge 2 3/4" Case
Federal Gold Medal Hull

Shot Wgt.	*Primer*	*Powder*	*Charge (grains)*	*Wad Column*	*Velocity (fps)*	*Pressure*
1 oz.	Win. 209	WST	20.5	Fed. 12S0	1180	7,400 psi
1 oz.	Win. 209	WST	22.0	Fed. 12S0	1235	8,500 psi
1 oz.	CCI 209	WST	21.0	Fed. 12S0	1235	8,500 psi
1 oz.	Win. 209	WST	23.0	Fed. 12S0	1290	9,300 psi
1 oz.	CCI 209	WST	22.5	Fed. 12S0	1290	9,500 psi
1 oz.	Fed. 209	WST	23.0	Fed. 12S0	1290	8,400 psi
1 1/8 oz.	CCI 209	WST	19.5	Fed. 12S3	1145	8,500 psi
1 1/8 oz.	Fed. 209	WST	20.0	Fed. 12S3	1145	7,700 psi
1 1/8 oz.	Win. 209	WST	21.0	Fed. 12S3	1200	9,500 psi
1 1/8 oz.	CCI 209	WST	21.0	Fed. 12S3	1200	10,300 psi
1 1/8 oz.	Fed. 209	WST	21.5	Fed. 12S3	1200	9,000 psi
1 1/4 oz.	CCI 209	WSF	27.0	Fed. 12S4	1275	9,200 psi
1 1/4 oz.	Win. 209	WSF	31.5	Fed. 12S4	1330	9,500 psi
1 1/4 oz.	CCI 209	WSF	29.5	Fed. 12S4	1330	10,600 psi

20 Gauge 2 3/4" Case
Winchester Compression-Formed

Shot Wgt.	*Primer*	*Charge Powder*	*(grains)*	*Velocity Wad Column*	*(fps)*	*Pressure*
7/8 oz.*	Win. 209	WSF	16.5	Win. WAA20	1200	11,200 psi
7/8 oz.	Win. 209	WSF	17.0	Rem. RXP20	1200	10,700 psi
7/8 oz.	Fed. 209	WSF	16.5	Win. WAA20	1200	11,400 psi
7/8 oz.	Fed. 209	WSF	17.0	Rem. RXP20	1200	10,500 psi
7/8 oz.	Fed. 209	WSF	16.5	Fed. 20S1	1200	11,400 psi
7/8 oz.	CCI 209	WSF	16.5	Win. WAA20	1200	11,300 psi
7/8 oz.	CCI 209	WSF	17.5	Rem. RXP20	1200	10,500 psi
7/8 oz.	CCI 209	WSF	16.5	Fed. 20S1	1200	11,400 psi

CAUTION: DO NOT INTERCHANGE FED 209 AND FED 209A PRIMERS

20 Gauge 2 3/4" Case- Remington-Peters "RXP" Plastic

Shot Wgt.	*Primer*	*Powder*	*Charge (grains)*	*Wad Column*	*Velocity (fps)*	*Pressure*
7/8 oz.	Win. 209	WSF	17.0	Win. WAA20	1200	10,500 psi
7/8 oz.	Win. 209	WSF	17.5	Rem. RXP20	1200	10,600 psi
7/8 oz.	Win. 209	WSF	17.0	Fed. 20S1	1200	11,300 psi
7/8 oz.	Fed. 209	WSF	17.0	Win. WAA20	1200	10,700 psi
7/8 oz.	Fed. 209	WSF	17.5	Rem. RXP20	1200	10,300 psi
7/8 oz.	Fed. 209	WSF	17.0	Fed. 20S1	1200	10,800 psi
7/8 oz.	CCI 209	WSF	17.0	Win. WAA20	1200	10,500 psi
7/8 oz.	CCI 209	WSF	17.5	Rem. RXP20	1200	9,700 psi
7/8 oz.	CCI 209	WSF	17.5	Fed. 20S1	1200	11,100 psi

410 Bore 2 1/2" Case Winchester Compression-Formed

Shot Wgt.	*Primer*	*Powder*	*Charge (grains)*	*Wad Column*	*Velocity (fps)*	*Pressure*
1/2 oz.	Win. 209	296	13.5	Win. WAA41	1150	9,100 LUP
1/2 oz.	CCI 109	296	13.5	Win. WAA41	1150	8,500 LUP
1/2 oz.	Win. 209	296	14.0	Win. WAA41	1200	9,800 LUP
1/2 oz.	Win. 209	296	14.0	Fed. 410SC	1200	10,300 LUP
1/2 oz.	CCI 109	296	14.0	Win. WAA41	1200	9,100 LUP
1/2 oz.	CCI 109	296	14.0	Fed. 410SC	1200	9,900 LUP

410 Bore 2 1/2" Case Remington-Peters "SP" Plastic (New style for 209 size primer)

Shot Wgt.	*Primer*	*Powder*	*Charge (grains)*	*Wad Column*	*Velocity (fps)*	*Pressure*
1/2 oz.	Win. 209	296	15.0	Rem. SP410	1200	9,500 LUP

410 Bore 3" Case Winchester Compression-Formed

Shot Wgt.	*Primer*	*Powder*	*Charge (grains)*	*Wad Column*	*Velocity (fps)*	*Pressure*
11/16 oz.	Win. 209	296	13.5	Win. WAA41	1135	10,800 LUP
11/16 oz.	Win. 209	296	13.5	Fed. 410SC	1135	10,800 LUP
11/16 oz.	Fed. 410	296	14.0	Win. WAA41	1135	10,000 LUP
11/16 oz.	Fed. 410	296	14.0	Fed. 410SC	1135	10,600 LUP

CAUTION: DO NOT INTERCHANGE FED 209 AND FED 209A PRIMERS

Centerfire Rifle Component Bullets

Combined Technology

Combine Technology bullets are the most technologically advanced bullets in history. The CT brand bullets combine Winchester and Nosler advanced development techniques and innovative production processes.

Fail Safe® (FS)

Solid, copper-alloy nose with notched hollow point cavity, combined with a lead core protected by a steel insert, delivers deep penetration and uniform, controlled expansion with virtual 100% bullet weight retention.

Caliber	Bullet Wt.	Caliber	Bullet Wt.
270	140 gr.	30	180 gr.
7mm	140 gr.	338	230 gr.
7mm	160 gr.	375	270 gr.
30	150 gr.	375	300 gr.
30	165 gr.		

Partition Gold™ (PG)

Partition Gold bullets incorporate proven Partition® technology to deliver consistent and dramatic bullet expansion with maximum weight retention and deep penetration.

Caliber	Bullet Wt.
270	150 gr.
7mm	160 gr.
30	150 gr.

*Same as bullet loaded in Supreme 45-70 Government

Ballistic Silvertip™ (BST)

Solid based boattail design delivers excellent long range accuracy. In varmint calibers, the Ballistic plastic polycarbonate Silvertip™ bullet initiates rapid fragmentation.

In medium to larger calibers special jacket contours extend range and reduce cross-wind drift. Harder lead core ensures proper bullet expansion.

Caliber	Bullet Wt.	Caliber	Bullet Wt.
22	40 gr.	270	130 gr.
22	50 gr.	7mm	140 gr.
243	55 gr.	30	150 gr.
243	95 gr.	30	168 gr.
25	85 gr.	30	180 gr.
25	115 gr.	338	200 gr.

Super-X® Hollow Point (HP)

Weight rearward design enhances bullet accuracy.

Caliber	Bullet Wt.
22	46 gr.

Super-X® Soft Point (SP)

Soft point bullets are designed for rapid, controlled expansion and maximum impact.

Caliber	Bullet Wt.
44	200 gr.

Full Metal Jacket

Full metal jacket design promotes positive functioning in all actions and delivers good accuracy, no bullet expansion or barrel leading.

Caliber	Bullet Wt.
22	55 gr.
308	147 gr.

Super-X® Pointed Soft Point (PSP)

Pointed bullet design retains velocity over long ranges. Soft nose initiates rapid bullet expansion. Jacket and core toughness vary according to caliber and weight of bullet.

Caliber	Bullet Wt.
22	50 gr.
22	55 gr.
243	80 gr.

Super-X® Power-Point® (PP)

Unique soft nose jacketed design delivers maximum energy on target. Notches around jacket mouth improve upset and ensure uniform, rapid expansion.

Caliber	Bullet Wt.	Caliber	Bullet Wt.
22	40 gr.	7.62mm	123 gr.
22	64 gr.	30	150 gr.
270	130 gr.	30	150 gr. (Flat Nose)
7mm	150 gr.	30	180 gr.

METALLIC CARTRIDGE RELOADING

Data Generation

Data tested for the current handbook included not only the various tests for pressure and velocity at ambient 70 degrees F, but also tests with powder positioned at the primer and the bullet to simulate muzzle up, muzzle down conditions. Further, the same kind of tests are run at +140 degrees F and -40 degrees F. A criterion for all these tests was the data listed for handloading provide results which would meet the stringent criteria which Winchester applied to factory ammunition. Such stringent testing resulted in not listing some calibers and/or bullet weights with Winchester's current line of powders because Winchester was not satisfied with the results. It is possible the reloader would never have noticed the difference, but Winchester wants to supply only the very best data possible. In some cases, certain loads were not included for safety reasons.

For the present, this data book represents all the applications of Propellants Winchester has been able to qualify. Under no circumstances would Winchester presume to suggest data which exceeds the Sporting Arms and Ammunition Manufacturers Institute's suggested recommended loading limit.

Powder Burning Rates

Do not use any burning rate chart as a guide to reloading.

Burning rate charts are developed in closed bomb tests. The closed bomb test results merely serve as a very vague guide to the laboratory technician equipped with the necessary pressure testing equipment. Closed bomb charts as developed by a powder manufacturer include only powder of their manufacture. So-called "burning rate charts" are usually the result of estimates of where powders would fit if they were to develop a closed bomb test list for all brand powders.

When powders are used in cartridge cases of varying sizes and shapes, the so-called burning rates can and do vary depending upon the exact set of loading circumstances. One can easily discover this by care-fully examining a manufacturer's loading data.

Such changes in apparent burning rates come as no surprise to the ballistician who regards closed bomb test results as merely a very crude guide. The same changes, however, have resulted in more than one reloader having trouble when attempting to extrapolate data from a burning rate chart.

Reloading data should never be extrapolated and since burning rate charts tend to be misleading, and are often the source of grief to the reloader, Winchester does not suggest the positioning of Winchester® powders on any burning rate chart.

Old Brass

Most of the older, obsolete cartridge cases were designed for use with Black Powder, the only available propellant at the time. The primers used contained a mercury fulminate mixture as the initiator. The mercury, by itself, is ruinous to the brass case, if it comes in direct contact with it, causing embrittlement and weakening of the brass structure. Fortunately for the old-timers using black powder, the powder fouling itself tended to dilute the effect of the mercury on the brass case.

The advent of smokeless powder greatly magnified the mercuric effect upon the brass cases, particularly those cases which were reloaded and refired. The cleaner burning propellant and the stronger primers used allowed the mercury to be driven deeper into the brass, causing serious weakening of the case.

The use of mercury in commercial priming mixtures continued in the U.S. until the early 1930s, when lead styphnate replaced mercury in priming. An exception to this was the continued use of a mildly mercuric priming mixture by Winchester for Super-Match® 30-06 Springfield and 300 H&H Magnum cartridges. This primer was discontinued in 1960.

Since it would be unusual for a present day handloader to acquire old and/or obsolete brass cartridge cases and be able to identify the period of manufacture, it is not worth the risk of injuring a shooter or damaging his gun to attempt to load such cases. Therefore, Winchester suggests not reloading old brass cartridge cases.

Loading Instructions

CAUTION: Carefully read the information on the powder can label and follow the recommended loading instructions and precautions contained herein before using the reloading data.

These suggested loads are based on results obtained in the Winchester laboratory under carefully controlled conditions. They are offered without a fee as an aid to handloaders, to be employed at their own discretion and risk. Since Winchester has no control over the circumstances of loading, Winchester assumes no liability for the results obtained.

The handloading of centerfire metallic cartridges should be undertaken only by those who are familiar with all safety precautions and who observe conservative practices in reloading operations. The powder charges shown are maximum and must not be exceeded.

Cases

Exercise extreme care in inspection of cases. Be sure cases are kept trimmed to the required length. Excess case length is a common cause of difficulty in reloading. Cases should be discarded prior to the fifth trimming.

Primers

All primers used for testing of the data were standard Winchester primers of the applicable size. Use caution against the substitution of any component as it can alter the ballistic level of the load. The only magnum primer used in the data testing was for 357 magnum cartridges.

Powder

Check all powder charges with a good scale. All loads listed are maximum loads. You must start 10% below the suggested load and work up to the maximum load carefully.

BLACK POWDER WARNING: Never substitute smokeless powder for black powder or Pyrodex® or mix smokeless powder with black powder or Pyrodex. Never use smokeless powder in black powder firearms or in saluting cannons. Smokeless powder has much more energy than black powder or Pyrodex. Substituting or mixing powders may cause the firearm to blow up resulting in personal injury, property damage, or death.

Pressure

All new pressure data has been measured with the latest piezo electric system showing actual pounds per square inch (psi) and cannot be compared directly to the old data which used the copper crusher pressure measurement method. This data replaces all previously published load data.

CENTERFIRE RIFLE LOADING DATA

The data for metallic cartridges contained in this handbook were obtained using Winchester cases and primers unless otherwise noted. Substitution of components other than bullets of the same size and weight from reputable manufacturers could alter the ballistic level and safety of these loads. Winchester strongly urges when using this information you use the components as shown.

Extrapolation of additional loads from this data should not be attempted. Such practice can be dangerous. Winchester has strived to show those applications for which BALL POWDER® smokeless propellant is most ideally suited. While other loads are certainly possible, the only way such loads can be developed is in a ballistic laboratory. Winchester cautions against the use of any other loads with Winchester smokeless propellant except where such loads have been adequately proven with the proper testing.

Velocity

Velocities quoted in the tables are averages of a series of shots fired in accordance with equipment and techniques universally used throughout the American arms and ammunition industry. Listed loads have given uniform velocity results in our tests.

All rifle velocities quoted have been measured in standard SAAMI* barrels of 24-inch length, except the 30 carbine data which was obtained in a 20" barrel.
*Sporting Arms and Ammunition Manufacturers Institute.

WARNING: Fail Safe® bullets are longer than many other bullets of the same weight. To avoid excessive pressure, DO NOT load Fail Safe and Partition Gold® bullets to the same powder charge recommended for other bullets of the same weight. Handload only in strict compliance with load data for Winchester Fail Safe and Partition Gold® bullets. Incorrect use of these components or incorrectly handloaded ammunition can cause serious injury or damage. Wear eye protection when handloading.

CENTERFIRE HANDGUN LOADING DATA

The data for the metallic cartridges contained in this handbook were obtained using Winchester® cases, primers and bullets unless otherwise noted. Any substitution of components other than bullets of the same type and weight from reputable manufacturers could alter the ballistic level and safety of these loads. We strongly urge when using this information use the components as shown.

Extrapolation of additional loads from this data should not be attempted. Such practice can be dangerous.

We have endeavored to show those applications for which Winchester smokeless propellant is most ideally suited. While other loads are certainly possible, the only way such loads can be developed is in a ballistic laboratory. We caution against the use of any other loads with Winchester smokeless propellant except where such loads have been adequately proven with the proper testing.

Warning– Loads using 296 powder require heavy bullet pull (heavy crimp). 296 powder is not suitable with light bullets. The use of 296 powder with light bullet pull (light crimp) or lightweight bullets can cause squib loads. Such loads create a hazard to both the shooter and bystander as a bullet lodged in the barrel may cause the gun to burst if not removed before the next round is fired. 296 powder is considered to be one of the best powders for use in magnum handgun cartridges. Please refer to page 6 for recommended primer and use a very heavy crimp.
Failure to follow this procedure could result in poor ignition and/or squib loads under extreme circumstances, particularly in loads where less than 90% of the available powder space is being used (low loading density).

Velocity

Velocities quoted in the tables are averages of a series of shots fired in accordance with equipment and techniques universally used throughout the American arms and ammunition industry. Listed loads have given uniform velocity results in our tests.

Handgun velocities quoted were measured in SAAMI* barrel lengths as listed.
*Sporting Arms and Ammunition Manufacturers Institute, Inc.

Rifle Data

Caliber Bullet Weight & Type	Charge Powder	Weight (grs.)	Velocity (fps)	Pressure
222 Remington				
45 grains SP	748	25.5	3210	41,000 C.U.P.
46 grains OPE	748	25.3	3125	38,000 C.U.P.
50 grains PSP	748	24.0	2980	38,000 C.U.P.
52 grains HPBT	748	22.6	2815	34,500 C.U.P.
53 grains HP	748	22.9	2855	36,000 C.U.P.
55 grains SP	748	24.0	2900	38,000 C.U.P.
55 grains FMJ	748	22.6	2750	33,800 C.U.P.
223 Remington				
50 grains PSP*	748	26.0	3200	40,000 C.U.P.
52 grains HPBT	748	25.5	3160	40,500 C.U.P.
53 grains HP	748	26.0	3200	43,500 C.U.P.
55 grains PSP	748	26.3	3150	39,000 C.U.P.
55 grains FMJ	748	26.2	3170	41,000 C.U.P.
62 grains FMJ	748	25.5	2985	49,200 psi
64 grains PP	748	25.0	2970	47,500 psi
69 grains HPBT	748	24.5	2870	51,500 psi
222 Remington Magnum				
50 grains PSP	748	27.2	3220	43,000 C.U.P.
52 grains HPBT	748	27.2	3270	45,500 C.U.P.
53 grains HP	748	27.2	3270	45,500 C.U.P.
55 grains PSP	748	27.2	3215	42,500 C.U.P.
55 grains FMJ	748	27.0	3215	44,000 C.U.P.
225 Winchester				
46 grains OPE	760	37.0	3650	46,000 C.U.P.
50 grains PSP	760	36.0	3570	49,000 C.U.P.
55 grains SP	760	35.8	3410	49,000 C.U.P.
55 grains FMJ	760	35.2	3480	47,500 C.U.P.
22/250 Remington				
46 grains OPE	748	36.8	3815	50,000 C.U.P.
46 grains OPE	760	41.0	3850	49,000 C.U.P.
50 grains PSP	748	35.0	3660	50,000 C.U.P.
50 grains PSP	760	39.5	3700	49,200 C.U.P.
52 grains HPBT	760	38.6	3595	46,500 C.U.P.
53 grains HP	760	38.6	3565	46,500 C.U.P.
55 grains SP	748	34.8	3500	49,500 C.U.P.
55 grains FMJ	748	35.6	3665	50,000 C.U.P.
55 grains SP	760	39.0	3675	49,000 C.U.P.
55 grains FMJ	760	39.5	3700	47,500 C.U.P.
243 Winchester				
75 grains HP	760	43.0	3320	49,000 C.U.P.
80 grains PSP	760	43.5	3280	51,000 C.U.P.
85 grains HP	760	40.5	3150	49,000 C.U.P.
25-06 Remington				
100 grains SP	WXR	53.5	3210	58,500 psi
120 grains HPBT	WXR	50.7	2975	58,500 psi
6mm Remington				
80 grains SP	760	42.8	3190	54,500 psi
25/35 Winchester				
117 grains SP	760	28.5	2200	34,500 C.U.P.
250 Savage				
60 grains OPE	748	40.8	3470	40,500 C.U.P.
60 grains OPE	760	44.0	3330	39,000 C.U.P.
87 grains SP	748	36.0	2940	41,000 C.U.P.
87 grains SP	760	39.5	2985	43,500 C.U.P.
100 grains SP	748	35.5	2820	43,500 C.U.P.
100 grains SP	760	38.8	2820	42,000 C.U.P.
257 Roberts +P				
75 grains HP	760	47.8	3420	42,500 C.U.P.

*Note: Maximum overall length on this load is 2.120”

Rifle Data

Caliber Bullet Weight & Type	Charge Powder	Weight (grs.)	Velocity (fps)	Pressure
6.5x55 Swedish				
140 grains PSP	760	39.6	2405	44,100 C.U.P.
160 grains SP	760	40.0	2285	43,700 C.U.P.
270 Winchester				
100 grains PSP	760	56.0	3335	48,000 C.U.P.
130 grains SP	WXR	58.0	3050	59,500 psi
130 grains SP	760	52.0	2990	49,500 C.U.P.
140 grains SBT	WXR	60.0	2930	59,400 psi
150 grains SP	WXR	59.5	2845	60,300 psi
150 grains SP	760	49.0	2725	48,500 C.U.P.
280 Remington				
120 grains SP	760	56.3	3125	57,500 psi
139 grains SP	WXR	59.2	2985	57,500 psi
145 grains SP	WXR	56.0	2865	58,000 psi
160 grains SBT	WXR	55.7	2795	58,000 psi
284 Winchester				
125 grains SP	748	50.8	3075	50,000 C.U.P.
125 grains SP	760	57.0	3180	50,000 C.U.P.
150 grains SP	748	48.5	2770	49,000 C.U.P.
150 grains SP	760	54.0	2890	49,000 C.U.P.
175 grains SP	760	49.6	2545	53,300 psi
7mm Rem Mag				
120 grains SP	WXR	68.8	3290	55,500 psi
140 grains BST (CT)	WXR	69.0	3135	58,300 psi
160 grains PG (CT)	WXR	67.5	2920	57,000 psi
160 grains FS (CT)	WXR	64.0	2910	60,100 psi
175 grains SBT	WXR	60.2	2850	57,400 psi
7mm Mauser				
125 grains SP	760	48.7	2885	43,500 C.U.P.
150 grains SP	760	46.5	2660	43,500 C.U.P.
175 grains SP	760	44.0	2400	44,500 C.U.P.
7mm-08 Remington				
120 grains SP	760	48.0	2990	56,600 psi
139 grains BT	760	45.4	2725	50,800 psi
150 grains SP	760	45.6	2645	49,900 psi
160 grains FS	760	41.0	2520	58,200 psi
175 grains SP	760	42.6	2515	58,300 psi
162 grains BT	760	43.0	2605	58,100 psi
30 Carbine				
110 grains HSP	296	15.0	1980	36,000 C.U.P.
30 Remington				
170 grains SP	748	30.0	2000	34,000 C.U.P.
170 grains SP	760	35.0	2095	35,000 C.U.P.
303 Savage				
170 grains SP	748	33.5	2090	32,000 C.U.P.
303 British				
123 grains SP	748	47.3	2720	34,000 psi
150 grains PSP	748	45.4	2565	37,700 psi
180 grains SP	748	39.8	2345	46,600 psi
180 grains SP	760	46.3	2435	46,550 psi
30/30 Winchester				
110 grains HSP	296	18.7	2155	36,000 C.U.P.
110 grains HSP	748	36.8	2595	33,000 C.U.P.
150 grains SP	748	34.5	2310	36,000 C.U.P.
150 grains SP	760	35.9	2090	30,000 C.U.P.
170 grains SP	748	32.0	2145	36,000 C.U.P.
170 grains SP	760	33.6	1975	30,000 C.U.P.

CT-Combined Technology, PSP-Pointed Soft Point, FS-Fail Safe, BST-Ballistic Silvertip, PG-Partition Gold, FMJ-Full Metal Jacket, SBT-Spitzer Boattail, HPBT-Hollow Point Boattail, SP-Soft Point, FMJBT-Full Metal Jacket Boattail, HSP-Hollow Soft Point, OPE-Open Point Expanding

Rifle Data

Caliber *Bullet Weight & Type*	*Charge* *Powder*	*Weight* *(grs.)*	*Velocity* *(fps)*	*Pressure*
300 Savage				
110 grains HSP	748	45.2	2930	41,500 C.U.P.
150 grains SP	748	42.0	2600	41,000 C.U.P.
150 grains SP	760	45.5	2580	42,000 C.U.P.
150 grains FS	748	40.9	2505	42,000 psi
165 grains FS	748	39.5	2340	39,900 psi
180 grains FS	748	38.8	2350	45,600 psi
180 grains SP	748	40.0	2375	43,000 C.U.P.
180 grains SP	760	44.5	2410	41,000 C.U.P.
307 Winchester				
130 grains SP	748	45.2	2720	38,000 C.U.P.
130 grains SP	760	45.2	2470	33,000 C.U.P.
150 grains SP	748	44.0	2625	44,500 C.U.P.
150 grains SP	760	44.0	2305	34,000 C.U.P.
170 grains SP	748	41.2	2455	44,000 C.U.P.
170 grains SP	760	41.2	2260	39,000 C.U.P.
308 Winchester				
110 grains SP	748	53.2	3300	46,000 C.U.P.
125 grains SP	748	52.0	3175	50,000 C.U.P.
147 grains FMJBT	748	45.2	2730	45,500 psi
147 grains FMJBT	760	51.8	2768	49,900 psi
150 grains SP	748	48.5	2865	48,000 C.U.P.
150 grains SP	760	50.1	2700	40,500 C.U.P.
150 grains FS	748	43.0	2540	45,100 psi
165 grains FS	748	42.0	2400	43,800 psi
180 grains FMJBT	748	45.5	2600	50,500 C.U.P.
180 grains SP	748	46.5	2610	48,500 C.U.P.
180 grains FMJBT	760	46.6	2535	43,000 C.U.P.
180 grains SP	760	48.0	2580	43,000 C.U.P.
180 grains FS	748	41.3	2420	54,900 psi
190 grains HPBT	748	42.0	2445	49,000 C.U.P.
200 grains SP	748	43.0	2435	50,000 C.U.P.
200 grains SP	760	45.7	2430	46,500 C.U.P.
30/40 Krag				
180 grains SP	760	44.5	2380	37,000 C.U.P.
220 grains SP	760	40.5	2070	36,000 C.U.P.
30/06 Springfield				
110 grains PSP	748	52.7	3230	47,000 C.U.P.
110 grains PSP	760	59.0	3210	45,500 C.U.P.
125 grains SP	748	51.0	3060	46,000 C.U.P.
125 grains SP	760	57.8	3125	45,000 C.U.P.
150 grains SP	748	48.0	2810	46,000 C.U.P.
150 grains SP	760	54.0	2900	48,000 C.U.P.
150 grains FS	760	55.1	2810	52,100 psi
165 grains FS	760	54.6	2690	53,300 psi
165 grains PG (CT)	WXR	60.0	2755	51,300 psi
168 grains HP	760	52.5	2665	47,000 C.U.P.
180 grains PG (CT)	WXR	60.0	2675	51,500 psi
180 grains FS (CT)	WXR	59.0	2670	52,000 psi
180 grains FMJBT	748	44.0	2530	47,000 C.U.P.
180 grains SP	748	45.0	2540	48,500 C.U.P.
180 grains FMJBT	760	52.5	2700	48,500 C.U.P.
180 grains SP	760	53.0	2725	50,000 C.U.P.
180 grains FS	760	51.4	2625	57,100 psi
190 grains HPBT	WXR	56.6	2600	53,400 psi
190 grains HPBT	760	52.0	2605	47,500 C.U.P.
200 grains SBT	WXR	55.3	2540	55,300 psi
200 grains SP	760	49.0	2470	46,000 C.U.P.
220 grains SP	760	49.0	2370	48,000 C.U.P.

Rifle Data

Caliber *Bullet Weight & Type*	*Charge* *Powder*	*Weight* *(grs.)*	*Velocity* *(fps)*	*Pressure*
300 Winchester Magnum				
165 grains SP	760	67.1	2995	60,800 psi
168 grains BST (CT)	WXR	77.0	3130	58,000 psi
180 grains FS (CT)	WXR	77.0	2970	56,400 psi
180 grains PG (CT)	WXR	76.0	2965	54,800 psi
200 grains SBT	WXR	71.4	2800	58,700 psi
32 Winchester Special				
170 grains SP	748	36.2	2240	35,500 C.U.P.
8mm Mauser				
170 grains SP	748	46.0	2410	37,000 C.U.P.
170 grains SP	760	48.0	2240	32,000 C.U.P.
338 Winchester Magnum				
200 grains SP	760	70.0	2900	51,000 C.U.P.
215 grains SBT	WXR	76.0	2860	60,200 psi
230 grains FS (CT)	WXR	73.0	2700	57,300 psi
250 grains PG (CT)	WXR	75.0	2640	57,000 psi
250 grains SP	760	63.2	2545	50,500 C.U.P.
300 grains SP	760	59.8	2285	51,500 C.U.P.
35 Remington				
200 grains SP	748	39.0	2130	33,000 C.U.P.
356 Winchester				
220 grains SP	748	42.1	2015	31,000 C.U.P.
220 grains SP	760	42.1	1805	27,500 C.U.P.
358 Winchester				
200 grains SP	748	50.6	2500	50,000 C.U.P.
250 grains SP	748	46.2	2250	50,500 C.U.P.
375 H&H Magnum				
270 grains SP	760	77.5	2660	51,000 C.U.P.
300 grains SP	760	77.5	2560	51,500 C.U.P.
300 grains FMJ	760	77.5	2560	51,500 C.U.P.
44/40 Winchester				
200 grains Lead	231	6.7	1100	12,000 C.U.P.
225 gr.Lead	231	5.8	1000	10,000 psi
458 Winchester Magnum				
500 grains FMJ	748	73.0	2040	39,000 C.U.P.
510 grains SP	748	75.0	2065	41,000 C.U.P.

CT-Combined Technology, PSP-Pointed Soft Point, FS-Fail Safe, BST-Ballistic Silvertip, PG-Partition Gold, FMJ-Full Metal Jacket, SBT-Spitzer Boattail, HPBT-Hollow Point Boattail, SP-Soft Point, FMJBT-Full Metal Jacket Boattail, HSP-Hollow Soft Point, OPE-Open Point Expanding

CAUTION: Reductions in powder charge not to exceed 10% or change in components should not be made because such changes can cause dangerous pressures.

Additional Rifle Data for Fail Safe® Bullets

Caliber & Bullet	*Primer*	*Shell Case*	*Powder Type*	*Charge Wt. (grs.)*	*Velocity (fps)*	*Pressure*
270 Winchester	Win.WLR	Win.	Varget™	44.5	2795	50,200 psi
140 grain	Win.WLR	Win.	H4350	52.5	2869	49,700 psi
Fail Safe Bullet	Win. WLR	Win.	H450	57.0	2862	50,800 psi
	Win. WLR	Win.	H4831	56.5	2890	50,300 psi
308 Winchester	Win. WLR	Win.	Reloader® 12	36.0	2285	55,380 psi
180 grain	CCI 200	Rem.	Accurate® 2495BR	36.0	2335	51,000 CUP
Fail Safe Bullet	CCI 200	Rem.	Accurate 2230™	38.5	2430	49,900 CUP
	CCI 200	Rem.	Accurate 2700™	45.5	2440	49,200 CUP
	CCI 200	Rem.	Accurate 2460™	39.0	2465	50,200 CUP
	Win. WLR	Win.	Reloader 15	41.5	2495	56,910 psi
	CCI 200	Rem.	Accurate 2520™	41.5	2520	48,600 CUP
300 Winchester	CCI 200	Rem.	Accurate 2700	65.0	2795	61,700 psi
Magnum	CCI 200	Rem.	Accurate 3100™	69.0	2840	60,300 psi
180 grain	Win.WLR	Win.	Reloader 19	72.3	2845	55,680 psi
Fail Safe Bullet	Win. WLR	Win.	Reloader 22	76.0	2865	54,490 psi
	CCI 200	Rem.	Accurate 4350™	65.0	2880	61,900 psi
	Win. WLRM	Win.	H4831®	76.5	2929	51,600 CUP
	Win. WLRM	Win.	H4350®	70.0	2954	52,600 CUP
30-06	CCI 200	IMI	Accurate 2015BR™	39.5	2400	50,000 CUP
Springfield	CCI 200	IMI	Accurate 2495BR™	43.5	2450	50,000 CUP
180 grain	CCI 200	IMI	Accurate 2230	42.5	2460	49,300 CUP
Fail Safe Bullet	CCI 200	IMI	Accurate 2460	43.5	2500	50,000 CUP
	Win. WLR	Win.	Reloader 12	45.3	2510	56,840 psi
	CCI 200	IMI	Accurate 2520	46.0	2545	48,000 CUP
	CCI 200	IMI	Accurate 2700	52.0	2570	49,100 CUP
	CCI 200	IMI	Accurate 4350	53.0	2575	48,800 CUP
	Win. WLR	Win.	Reloader 15	47.0	2595	56,510 psi
	Win. WLR	Win.	H414®	51.0	2621	48,800 CUP
	Win. WLR	Win.	H4895®	47.0	2638	48,500 psi
	Win. WLR	Win.	Reloader 22	59.0	2665	51,980 psi
	Win. WLR	Win.	Reloader 19	57.2	2685	55,270 psi
	Win. WLR	Win.	H4350	55.0	2725	49,100 CUP
300 Weatherby	Fed. 215	Rem.	Accurate 4350	74.5	3034	60,200 CUP
Magnum	Fed. 215	Rem.	Accurate 3100	80.0	3030	60,400 CUP
180 grain						
Fail Safe Bullet						
338 Winchester	CCI 250	Win.	Accurate 2495BR	53.0	2525	48,900 CUP
Magnum	CCI 250	Win.	Accurate 2700	67.0	2695	47,200 CUP
230 grain	Win. WLR	Win.	Reloader 22	73.0	2750	56,360 psi
Fail Safe Bullet	Win. WLRM	Win.	H4350	74.0	2780	51,300 CUP
	Win. WLR	Win.	Reloader 19	72.0	2785	60,460 psi
	CCI 250	Win.	Accurate 4350	70.0	2805	49,500 CUP

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Centerfire Handgun Component Bullets

Combined Technology

Combine Technology bullets are the most technologically advanced bullets in history. The CT brand bullets combine Winchester and Nosler advanced development techniques and innovative production processes.

CT Partition Gold™ (PG)

¥Proven Partition Technology
¥ Consistent, Dramatic Bullet Expansion
¥ Deep Penetration Regardless of Barrel Length
¥ Maximum Weight Retention

Caliber	Bullet Wt.	Caliber	Bullet Wt.
38/357	180 gr.	45	260 gr.
44	250 gr.	45	300 gr.

Silvertip® Hollow Point (STHP)

- Rapid Energy Deposit
- Positive Functioning
- Uniform Expansion

Caliber	Bullet Wt.	Caliber	Bullet Wt.
38/357	145 gr.	40/10mm	155 gr.
9mm	115 gr.	40/10mm	175 gr.
9mm	147 gr.	44	210 gr.

Full Metal Jacket (FMJ)

- Positive Functioning
- No Expansion
- Good Accuracy
- No Barrel Leading

Caliber	Bullet Wt.	Caliber	Bullet Wt.
380	95 gr.	40/10mm	165 gr. (Truncated Cone)
38	130 gr.		
9mm	115 gr. (Flat Base)	40/10mm	180 gr. (Truncated Cone)
9mm	115 gr. (Hollow Base)		
9mm	124 gr. (Flat Base)	45	230 gr.

Jacketed Soft/Hollow Point (JSP/JHP)

- Positive Expansion
- Proven Accuracy
- Notched Jacket

Caliber	Bullet Wt.	Caliber	Bullet Wt.
9mm	115 gr.	38/357	158 gr.
9mm	147 gr.	40/10mm	180 gr.
38/357	110 gr.	45	230 gr.
38/357	125 gr.		
44	240 gr.		

Handgun Data

Bullet Wt. & Type	*Pwdr*	*Starting Chg.Wt. (grs.)*	*Velocity (fps)*	*Pressure (psi)*	*Max Chg. Wt. (grs.)*	*Velocity (fps)*	*Pressure (psi)*
30 Luger							
93 gr. FMJ	231				4.2	1085	25,500cup
32 S&W							
85 gr. Lead	231				1.4	595	9,500cup
32 Auto							
71 gr. FMJ	231				2.5	865	14,000cup
32 S&W Long							
98 gr. Lead	231				2.4	765	11,000cup
38 S&W							
145 gr. Lead	231				2.6	675	11,500cup
380 Auto							
95 gr. FMJ	231				3.2	860	15,000cup
38 Auto							
130 gr. FMJ	231				4.4	875	20,000cup
38 Super Auto +P							
115 gr. JHP	231	5.0	1080	25,500	5.9	1230	34,200psi
	WSF	6.0	1185	28,100	7.1	1320	34,400psi
124 gr. FMJ	231	4.9	1060	27,500	5.7	1185	34,600psi
	WSF	5.2	1060	25,800	6.6	1245	34,600psi
130 gr. FMJ	231	4.8	1020	26,300	5.6	1145	34,800psi
	WSF	5.4	1065	26,100	6.3	1200	34,400psi
147 gr. JHP	231	4.4	930	28,500	4.9	1010	34,900psi
	WSF	4.8	960	27,300	5.6	1070	34,400psi
160 gr. Lead	231	3.5	860	27,300	4.2	955	34,400psi
	WSF	3.8	875	25,300	4.9	1010	34,600psi
38 Special							
148 gr. Lead HBWC	231	2.9	690	12,400	3.3	770	16,100psi
	WST	2.5	680	13,000	2.8	735	16,000psi
148 gr. Lead BBWC	231	3.0	690	13,600	3.4	760	16,400psi
	WST	2.5	665	13,100	2.7	700	16,300psi
158 gr. Lead	231	(6-1/8" barrel) (cowboy load)			4.1	900	16,000psi
158 gr. SWC	231	4.0	745	12,600	4.5	830	15,800psi
	WST	3.3	705	12,800	3.7	770	15,700psi

Handgun Data

Bullet Wt. & Type	*Pwdr*	*Starting Chg.Wt. (grs.)*	*Velocity (fps)*	*Pressure (psi)*	*Max Chg. Wt. (grs.)*	*Velocity (fps)*	*Pressure (psi)*
38 Special +P							
110 gr. JHP	231	5.3	935	14,700psi	5.7	1015	17,600psi
125 gr. JHP	231	4.8	840	14,100psi	5.3	935	17,200psi
140 gr. JHP	231	4.3	685	13,900psi	4.8	785	17,200psi
158 gr. JHP	231	4.0	635	13,900psi	4.4	720	17,200psi
158 gr. LSWC	231				4.7	860	17,100psi
	WST				3.9	800	17,300psi
357 Magnum							
110 gr. JHP	231				8.8	1575	42,500cup
125 gr. JHP	231				8.1	1460	42,500cup
125 gr. JHP	296*				18.5	1800	32,500cup
145 gr. STHP	296*				17.5	1640	31,600cup
148 gr. WC	231				3.4	880	19,500cup
150 gr. Lead	231				6.9	1305	42,000cup
150 gr. Lead	296*				14.0	1510	32,000cup
158 gr. JHP	231				6.9	1260	42,000cup
158 gr. Lead	231				6.7	1275	42,500cup
158 gr. Lead	296*				14.5	1560	38,000cup
158 gr. JHP	296*				16.6	1610	39,500cup
170 gr. FMJ	296*				14.3	1390	42,000cup
200 gr. Lead	231				5.5	1060	42,500cup
200 gr. Lead	296*				12.4	1335	35,000cup
357 Maximum							
180 gr. FMJ	296*				19.0	1670	46,900cup
357 Sig							
125 gr. FMC-FN	WSF				7.1	1260	33,800psi
9x23mm Winchester							
125 gr. JHP	231				5.3	1180	38,000psi
125 gr. JHP	231				6.3	1300	46,000psi
9mm Luger							
95 gr. FMJ	231	4.6	1145	27,100psi	5.1	1235	32,600psi
114 gr. Lead CCN	231	3.8	1010	26,900psi	4.2	1115	32,000psi
115 gr. FMJ	231	4.4	1045	25,900psi	4.9	1135	32,600psi
	WSF	4.9	1060	24,200psi	5.7	1195	31,900psi
115 gr. JHP	231	4.3	1010	25,800psi	4.8	1120	32,100psi
	WSF	5.2	1095	28,700psi	5.7	1165	32,100psi
124 gr. Lead RN	231	3.3	910	23,800psi	4.0	1035	32,900psi
	WSF	4.0	945	22,200psi	4.7	1055	27,300psi
124 gr. FMJ	231	4.2	1005	28,800psi	4.5	1060	32,700psi
	WSF	4.7	1015	27,700psi	5.3	1115	32,700psi
147 gr. Lead CFP	231	3.3	865	29,000psi	3.5	905	32,100psi
	WSF	3.7	905	28,500psi	4.1	965	32,800psi
147 gr. FMJ	WSF	3.9	895	28,400psi	4.3	950	32,300psi
147 gr. JHP	WSF	4.0	900	30,100psi	4.3	935	32,300psi

Note: 296 powder is considered to be one of the best powders for use in magnum handgun cartridges. Please refer to page for recommended primer and use a very heavy crimp. Failure to follow this procedure could result in poor ignition and/or squib loads under extreme circumstances, particularly in loads where less than 90% of the available powder space is being used (low loading density).

Handgun Data

Bullet Wt. & Type	Pwdr	Starting Chg.Wt. (grs.)	Velocity (fps)	Pressure (psi)	Max Chg. Wt. (grs.)	Velocity (fps)	Pressure (psi)
40 S&W							
150 gr. JHP	231	5.2	970	21,800psi	6.3	1150	33,200psi
	WST	5.5	990	23,900psi	6.3	1050	27,100psi
	WSF	6.7	1100	26,200psi	7.7	1200	33,200psi
155 gr. JHP	231	5.1	950	23,200psi	6.0	1100	33,200psi
	WST	5.5	980	24,000psi	6.0	1040	27,900psi
	WSF	6.0	1010	21,600psi	7.3	1180	33,200psi
170 gr. JHP	231	4.5	860	24,000psi	5.3	1000	33,200psi
	WST	4.2	830	22,100psi	5.5	970	30,100psi
	WSF	5.5	920	23,300psi	6.5	1080	33,200psi
170 gr. Lead	231	4.0	850	22,800psi	5.2	1030	33,200psi
	WST	4.0	870	22,800psi	5.0	970	30,000psi
	WSF	5.2	950	23,500psi	6.2	1090	33,200psi
180 gr. JHP	231	4.0	790	23,700psi	5.0	950	33,200psi
	WST	4.0	780	21,800psi	5.0	900	28,100psi
	WSF	5.0	860	22,900psi	6.2	1040	33,200psi
200 gr. FMJ	231	4.0	750	26,600psi	4.7	850	33,200psi
	WST	3.8	740	24,200psi	4.5	810	29,900psi
	WSF	4.9	840	25,600psi	5.7	930	33,200psi
200 gr. Lead	231	3.0	700	21,100psi	4.0	850	33,200psi
	WST				3.5	760	25,200psi
	WSF	3.9	785	21,800psi	5.0	920	33,200psi
10MM							
150 gr. JHP	231	6.0	1090	29,000psi	7.0	1210	35,600psi
	WST	5.5	1080	30,200psi	7.0	1190	34,000psi
	WSF	6.5	1090	24,700psi	8.1	1310	35,600psi
155 gr. JHP	231	5.8	1040	23,300psi	7.3	1250	35,600psi
	WST	5.0	1000	23,100psi	8.0	1220	31,900psi
	WSF	6.8	1100	23,000psi	8.4	1320	35,600psi
170 gr. Lead	231	4.8	980	26,400psi	5.6	1100	35,600psi
	WST				5.0	1020	32,100psi
	WSF	5.5	1020	25,700psi	6.6	1170	35,600psi
170 gr. JHP	231	4.7	880	20,600psi	6.3	1120	35,600psi
	WST	4.5	940	26,200psi	5.5	1020	29,500psi
	WSF	6.0	1020	24,000psi	7.5	1210	35,600psi
180 gr. JHP	231	5.2	950	29,600psi	5.8	1050	35,600psi
	296*				12.6	990	22,400psi
	WST	5.0	950	30,500psi	5.5	1010	35,200psi
	WSF	5.7	950	25,000psi	7.1	1150	35,600psi
190 gr. FMJ	231	4.6	800	22,000psi	5.9	1030	35,600psi
	296*				12.6	970	22,200psi
	WST				4.5	850	26,700psi
	WSF	5.5	880	22,000psi	7.1	1120	35,600psi
200 gr. Lead	231	4.2	870	24,200psi	5.5	1030	35,600psi
	WST	3.8	830	23,900psi	5.0	940	32,400psi
	WSF	5.0	920	23,500psi	6.3	1080	35,600psi
200 gr. FMJ	231	4.6	840	24,600psi	5.6	1000	35,600psi
	296*				11.6	940	23,600psi
	WST				4.6	890	35,600psi
	WSF	5.2	880	26,200psi	6.2	1020	35,600psi

Note: 296 powder is considered to be one of the best powders for use in magnum handgun cartridges. Please refer to page for recommended primer and use a very heavy crimp. Failure to follow this procedure could result in poor ignition and/or squib loads under extreme circumstances, particularly in loads where less than 90% of the available powder space is being used (low loading density).

Handgun Data

Bullet Wt. & Type	Pwdr	Starting Chg.Wt. (grs.)	Velocity (fps)	Pressure (psi)	Max Chg. Wt. (grs.)	Velocity (fps)	Pressure (psi)
41 Magnum							
210 gr. Lead	231				7.4	1125	28,000cup
210 gr. JSP	231				8.8	1220	38,000cup
	296*				20.4	1460	24,000cup
44 S&W Special							
246 gr. Lead	231				5.4	795	12,500cup
240 gr. Lead	231	(cowboy load-6-12"barrel)			4.9	800	13,000cup
44 Rem Mag							
210 gr. JHP	231				11.7	1385	38,000cup
240 gr. Lead SWC	231				11.0	1285	38,000cup
	296*				25.0	1560	37,500cup
240 gr. HSP	231				11.2	1280	38,000cup
	296				24.0	1430	38,000cup
45 Colt							
255 gr. Lead	231				7.1	875	13,000cup
250 gr. Lead	231	(cowboy load-5-1/2" barrel)			5.5	750	10,000psi
454 Casull							
260 gr. JSP	296*				34.0	1830	40,000psi
	296*				36.0	1965	50,000psi
300 gr. JSP	296*				29.5	1600	38,000psi
	296*				31.5	1750	50,000psi
45 Auto							
180 gr. Lead	231	5.3	885	15,300psi	6.3	1020	20,000psi
Cast SWC	WST	4.6	880	16,200psi	5.4	1000	20,000psi
	WSF	6.6	960	15,900psi	7.4	1060	20,000psi
185 gr. JSWC	231	5.1	760	13,300psi	6.1	920	18,600psi
	WST	4.3	745	13,400psi	5.3	890	19,000psi
	WSF	6.0	775	12,800psi	7.0	950	17,600psi
185 gr. JHP	231	6.2	915	17,200psi	6.8	990	19,500psi
	WST	5.1	875	17,100psi	5.6	935	19,800psi
	WSF	7.2	920	15,600psi	7.9	1035	19,700psi
200 gr. Lead	231	4.8	800	14,900psi	5.5	910	19,600psi
Cast SWC	WST	4.4	830	15,400psi	5.1	910	19,900psi
	WSF	6.0	870	15,200psi	6.7	970	19,400psi
200 gr. FPJ	231	5.4	815	16,200psi	6.1	920	19,900psi
	WST	4.7	825	16,400psi	5.3	890	20,000psi
	WSF	6.5	870	15,500psi	7.3	980	19,400psi
200 gr. JHP	231	5.3	830	16,200psi	5.8	905	19,500psi
	WST	4.7	820	16,900psi	5.2	885	19,900psi
	WSF	6.6	870	15,500psi	7.1	970	19,500psi
230 gr. Lead RN	231	4.5	765	15,500psi	5.1	870	19,800psi
	WST	4.0	750	16,200psi	4.5	805	20,100psi
	WSF	5.5	820	15,200psi	6.2	910	19,600psi
230 gr. FMJ	231	4.9	695	14,900psi	5.7	830	19,200psi
	WST	4.1	710	15,500psi	4.9	800	19,900psi
	WSF	5.7	755	14,900psi	6.6	885	19,200psi
230 gr. JHP	231	4.8	740	18,000psi	5.1	785	20,000psi
	WSF	5.7	780	16,500psi	6.1	850	19,600psi

Note: 296 powder is considered to be one of the best powders for use in magnum handgun cartridges. Please refer to page for recommended primer and use a very heavy crimp. Failure to follow this procedure could result in poor ignition and/or squib loads under extreme circumstances, particularly in loads where less than 90% of the available powder space is being used (low loading density).

WARNINGS

Read before using data

The shotshell and metallic cartridge data in this booklet supersede all previous data published for Winchester smokeless propellants.

The data shown in this booklet has been verified by tests fired in our laboratory under controlled conditions and found to produce safe cartridges. Since we have no control over the actual loading procedures and methods used, or the condition or choice of firearms and components used and assembled, no responsibility for the use or safety in use of these data is assumed or implied. Where data contained in this booklet list specific components, no changes or substitutions for these components can be made. The exception to this is substitutions of bullets of the same type, diameter, and weight from reputable manufacturers, without risking significant changes in the level of ballistic performance and/or safety of the loads shown.

WARNING - All smokeless powders are extremely flammable. Keep them stored in their original containers in locked cabinets, out of the reach of children or incompetent persons, and away from exposure to the sun's rays, heating equipment, electrical equipment, or any source of heat, flame or sparks.

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Black Powder - WARNING

Never substitute smokeless powder for black powder or Pyrodex or mix smokeless powder with black powder or Pyrodex. Never use smokeless powder in black powder firearms or in saluting cannons. Smokeless powder has much more energy than black powder or Pyrodex. Substituting or mixing powders may cause the firearm to blow up resulting in personal injury, property damage, or death.

Lead - WARNING

Discharging firearms in poorly ventilated areas, cleaning firearms, or handling ammunition may result in exposure to lead, and other substances known to cause birth defects, reproductive harm, and other serious physical injury. Have adequate ventilation at all times. Wash hands thoroughly after exposure.

Dram Equivalent - WARNING

Never use the dram equivalent measure as a weight for smokeless powders in reloading. Dangerously high pressures can occur and result in personal injury, property damage, or death.

Powder Storage - WARNING

The following information has been extracted from a pamphlet entitled "Properties and Storage of Smokeless Powder" issued by the Sporting Arms and Ammunition Manufacturers Institute (SAAMI) at Flintlock Ridge Office Center, 11 Mile Hill Rd., Newtown, CT 06470-2359/203-426-1320; FAX: 203-426-1087. For a free copy of the complete pamphlet send a self-addressed, stamped envelope to the above address and request the pamphlet by title.

Considerations for Storage of Smokeless Powder

Smokeless powder is intended to function by burning, so it must be protected against accidental exposure to flame, sparks or high temperatures.

For these reasons, it is desirable that storage enclosures be made of insulating materials to protect the powder from external heat sources.

Once smokeless powder begins to burn, it will normally continue to burn (and generate gas pressure) until it is consumed.

D.O.T. approved containers are constructed to open up at low internal pressures to avoid the effects normally produced by the rupture or bursting of a strong container.

Storage enclosures for smokeless powder should be constructed in a similar manner:

1. Of fire-resistant and heat insulation materials to protect contents from external heat.
2. Sufficiently large to satisfactorily vent the gaseous products of combustion which would result if the quantity of smokeless powder within the enclosure accidentally ignited.

If a small, tightly enclosed storage enclosure is loaded to capacity with containers of smokeless powder, the wall of the enclosure will expand or move outwards to release the gas pressure if the powder in storage is accidentally ignited. Under such conditions, the effects of the release of gas pressure are similar or identical to the effects produced by an explosion.

Hence only the smallest practical quantities of smokeless powder should be kept in storage, and then in strict compliance with all applicable laws, regulations and recommendations of the National Fire Protection Association (reprinted at end of SAAMI pamphlet).

Recommendations for Storage of Smokeless Powder

STORE IN A COOL, DRY PLACE. Be sure the storage area selected is free from any possible sources of excess heat and is isolated from open flame, furnaces, hot water heaters, etc. Do not store smokeless powder where it will be exposed to sun's rays. Avoid storage in areas where mechanical or electrical equipment is in operation. Restrict from the storage areas heat or sparks which may result from improper, defective or overloaded circuits.

DO NOT STORE SMOKELESS POWDER IN THE SAME AREA WITH SOLVENTS, FLAMMABLE GASES OR HIGHLY COMBUSTIBLE MATERIALS.

STORE ONLY IN DEPARTMENT OF TRANSPORTATION APPROVED CONTAINERS. Do not transfer the powder from an approved container into one which is not approved.

DO NOT SMOKE IN AREAS WHERE POWDER IS STORED OR USED. Place appropriate "No Smoking" signs in these areas.

DO NOT SUBJECT THE STORAGE CABINETS TO CLOSE CONFINEMENT.

STORAGE CABINETS SHOULD BE CONSTRUCTED OF INSULATING MATERIALS AND WITH A WEAK WALL, SEAMS OR JOINTS TO PROVIDE AN EASY MEANS OF SELF-VENTING.

DO NOT KEEP OLD OR SALVAGED POWDERS. Check old powder for deterioration regularly. Destroy deteriorated powders immediately.

OBEY ALL LAWS AND REGULATIONS REGARDING QUANTITY AND METHODS OF STORING. Do not store all your powders in one place. If you can, maintain separate storage locations. Many small containers are safer than one or more large containers.

KEEP YOUR STORAGE AND USE AREA CLEAN. Clean up spilled powder promptly. Make sure surrounding area is free of trash or other readily combustible materials.

How to Check Smokeless Powder for Deterioration

Powder deterioration can be checked by opening the cap on the container and smelling the contents. Powder undergoing deterioration has an irritating odor. (Don't confuse this with common solvent odors such as alcohol, ether and acetone.)

The best way to dispose of deteriorated smokeless powder is to burn it out in the open at an isolated location in small shallow piles (not over 1" deep). The quantity burned in any one pile should never exceed one pound. Use an ignition train of slow burning combustible material so the person may retreat to a safe distance before powder is ignited.

Primer - WARNING

Instructions & Warning for the Safe Storage and Handling of Primers

It is the responsibility of all persons who receive, store and use primers to be aware of the hazards and to know and follow all approved safety procedures. It is your responsibility to strictly comply with all applicable federal, state and local laws, regulations and ordinances.

Properties of Primers - DANGER

BULK STORAGE OF PRIMERS IS EXTREMELY DANGEROUS!!

Primers should never be stored, handled or used in bulk; i.e. piled or poured together. The energy of one exploding primer is sufficient to cause mass detonation of the surrounding primers. This could result in property damage and serious injury or death to operators and/or bystanders.

Note: Primers Should Always Be Kept In Their Original Factory Containers.

Primers contain mixtures of chemical ingredients designed to explode and provide the necessary energy in the form of hot particles, heat, & gas to ignite propellant powders.

Primers are sensitive to the following:

Impact, Friction, Heat, Flame, Static Electricity, and Mishandling abuses.

Conditions which may cause misfires or poor ignition:

Exposure to water

Exposure to organic solvents such as paint thinner, gasoline, oil, grease, penetrating lubricants, etc.

Exposure to temperatures above 140 degrees Fahrenheit

Primers subjected to shaking, vibration, jolting, etc. may separate small particles of priming compound. This is referred to as "dusting". Accumulation of primer dust in primer feeds, on machine surfaces, in loading areas, etc. is extremely dangerous. Primer dust may cause fires and/or explosions due to heat, impact, friction, flame or static electricity. These areas must be kept very clean.

Storage of Primers– Store in a Cool Dry Place

BULK STORAGE OF PRIMERS IS EXTREMELY DANGEROUS!!

Primers should never be stored, handled or used in bulk; i.e. piled or poured together. The energy of one exploding primer is sufficient to cause mass detonation of the surrounding primers. This could result in property damage and serious injury or death to operators and/or bystanders.

Note: Store Primers in a Cool Dry Place Away From Heat, Sparks & Flame.

Cabinets designated for primers only are recommended. They should be constructed of materials designed to provide a substantial delay in the transmissions of heat in case of fire.

The storage area should be clean and free of other combustible materials such as propellant powders, solvents, flammable gases, etc. Avoid areas which may be subjected to high temperatures, open flames, furnaces, water heaters, direct sunlight, gunfire and bullet impact, the operation of mechanical or electrical equipment and static electricity. Primers should be stored in original factory containers only. The packaging has been designed to minimize accidental ignition and to protect the consumers as well as the primers.

NEVER SMOKE IN PRIMER STORAGE AREAS.

Observe all federal, state and local laws, regulations and ordinances regarding quantities of primers stored and conditions of storage.

Handling of Primers - Handle with Care

BULK HANDLING OF PRIMERS IS EXTREMELY DANGEROUS!!

Primers should never be stored, handled or used in bulk; i.e. piled or poured together. The energy of one exploding primer is sufficient to cause mass detonation of the surrounding primers. This could result in property damage and serious injury or death to operators and/or bystanders.

Safety glasses should be worn at all times. Additional protection such as face shields and machine guards are also recommended for personal safety.

NEVER SMOKE WHILE HANDLING PRIMERS.

Primers are extremely sensitive and should always be handled with care.

Primers should be handled individually with adequate safeguards. The use of primer feeds for reloading is not recommended. Adequate protection from the danger of explosion must be provided by machine guards, barriers, etc.. Primer feeds allowing contact between or among individual primers cause a potentially dangerous condition and are to be avoided. One exploding primer could cause detonation of all primers in the area.

Do not decap live primers. It is recommended live primers be destroyed by firing the empty shell or cartridge in a suitable firearm.

Areas designated for the storage and/or handling of primers should require equipment and wiring methods suitable for hazardous locations (National Electrical Code, Class II, Div. I). Persons responsible for these areas should also observe and comply with all applicable federal, state and local laws, regulations and ordinances pertinent to their location.

Precautions should be taken to prevent the accumulation of static electricity on persons handling primers or conducting handloading procedures. Cotton clothing, conductive shoes & floors, individual ground straps, static bars, leg stats, and proper electrical/mechanical grounds all help to reduce, dissipate and/or eliminate the buildup of static electricity. Atmospheric conditions, especially low humidity, will increase the potential of static accumulation. The working area should be maintained at a comfort-able temperature with a relative humidity of at least 60% to minimize static buildup and/or discharge.

Good housekeeping is a must for safe cartridge loading and primer handling. Equipment and work areas should be kept clean and free of loose primers, primer dust, propellant powder, and/or abrasive materials. A damp cloth or sponge should be used to clean contaminated areas and be thoroughly rinsed after use. Do not use a vacuum cleaner because fire or explosion may result.

Loading operations should be conducted with a minimum quantity of primers. Unused primers should be returned to the original package and placed in a designated safe storage area.

It is common sense to make primers unavailable to children, household pets, and any individuals that are not familiar with the potential danger of primers.

Never smoke or allow open flames, spark sources or hot particles near primers or loading areas.

Additional References:

Sporting Arms & Ammunition Manufacturer's Institute (S.A.A.M.I.)

National Electrical Code (NEC)

National Fire Protection Association (NFPA) 495, Explosive Materials Code

Occupational Safety & Health Administration (OSHA)

WARNING: DO NOT INTERCHANGE FEDERAL 209 AND FEDERAL 209A PRIMERS

Reloading Precautions – WARNING

Follow these precautions to assure maximum enjoyment and safety in reloading and uniform performance of your reloads. Remember you can suffer severe burns, be badly injured, or killed if the strictest safety precautions and housekeeping rules are not enforced.

1. Exercise care at all times. Wear safety glasses while reloading.
2. Never smoke while handling powder or primers or during any reloading operation.
3. Keep powder and primers away from heat, sparks and open flames.
4. Store powder in a cool, dry place at all times.
5. Never use a powder unless you are certain of its identity.
5. -Always read warnings on powder and component container labels.
5. -Always read and understand the instruction manual for your reloading machine/tools.
5. -Always reload in strict compliance with instructions in current reloading manuals.
6. Do not mix powders.
7. Devote full attention to reloading operations– avoid distractions.
8. Keep powder and primers out of reach of children.
9. Use components as recommended; don't take shortcuts.
10. Never exceed maximum recommended loads.
11. Examine every shell or cartridge before loading to insure good condition.
12. Double check every operation for safety and uniformity.
13. Check powder charge level in shells to avoid double charges.
14. On centerfire loads, start with charge weights 10% below recommended maximum loads.
15. Always watch for indications of excessive pressure.
16. Do not decap live primers; it is safer to destroy them by firing the empty shell or cartridge in a firearm.
17. Do not substitute components, except bullets of the same type and weight from reputable manufacturers. It could result in a significant change in ballistics, and unsatisfactory or even dangerous load.
18. Observe all local fire regulations and codes with respect to quantities of powders and primers stored and conditions of storage.
19. Store powder in its original container. Never transfer it from one storage container to another since this increases the possibility of becoming mislabeled.
20. Do not use the shotshell data contained in this handbook with steel shot; to do so would cause an extremely dangerous condition. Steel shot requires the use of special data, wads and powders.

When such components become available, Winchester will develop data specifically for steel shot.

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